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No. 29.

No. 29. Wrought-iron Grille from the belfry-arch of St. Guy Cathedral, Prague. Seventeenth century. From the design of Mr. Schmoranz, Archt.

## VARIOUS.

### Alloys.

Most metals are capable of uniting with others, the combination forming what are termed alloys. These are chemical compounds; not, as some persons suppose, simply mixtures. In many cases, when one metal unites with another, the alloy gives scarcely any indications of the characters of the component metals. Thus, copper alloyed with aluminum, in the proportion of 90 of the former to 10 of the latter, gives the alloy called aluminum gold. Again, the alloy called Regulus of Venus, so named from the beautiful violet color, consists of equal weights of copper and antimony, neither of which metals is at all similar to the resulting alloy. Some metals, when alloyed, although they undergo no peculiar modification in color, do so with regard to some other of

their natural properties, the difference of melting temperature being perhaps the most remarkable. Of this class, plumbers' solder, which consists of 2 parts of lead, fused with 1 of tin, and the alloys in which these proportions are reversed to 2 parts of tin and 1 of lead, are the best known, and are much more fusible than either of the metals used in making them. A remarkable alloy of this class is that of bismuth, which melts at 500° Fah.; lead, which melts at 600° Fah.; and tin, which melts at 442° Fah.; in the proportion of 8 of bismuth, 5 of lead, and 3 of tin. This alloy melts below the boiling point of water or 212° Fah.; although even the most fusible of its components requires more than double that temperature to melt it. Toy teaspoons are made of this alloy. When used to stir hot tea, the bowls of the spoons all disappear to the bottom of the cup. The alloy of bismuth 8, lead 4, cad-

mium 2, and tin 2, melts at 160° Fah.; that is 52° below the boiling point of water. There is one more alloy which may be mentioned, on account of its peculiarity of being liquid at the ordinary temperature, there being only one other metal liquid under the same conditions; namely, mercury. This alloy consists of equal parts of potassium and sodium. Both of these metals are solid at the ordinary temperature; but when alloyed in equal proportions, they remain liquid.

*Piesse.*

### Woods used in Cabinet Making.

Mr. Thomas Paterson was one of the working men who visited the Paris Exhibition last year, and ably reported on what he saw there. His report is one of the twelve which compose the little work under the title of «Modern Industries» issued under the auspices of the Paris Excursion Committee. In looking through the magnificent collections of woods from Brazil, Canada, and New South Wales, and the smaller but not less interesting exhibits of Algiers, Natal, Guinea, etc., it is impossible not to be struck, says Mr. Paterson, with the small number of these woods which are in actual use in the manufacture of furniture. Some of the woods are shown to be of large size, and are exceedingly beautiful in color and figure, and many of them would contrast admirably with some of those at present in use.

There was a contribution to the Exposition of specimens of timber, collected by the late Captain Fowke, in which several hundreds of different kinds of wood are arranged in a kind of revolving screen. Each specimen is labeled with its specific gravity, and the amount of weight necessary to break it. Each piece was of the same size — viz., two inches square, and has been actually broken by the weight marked on it, thus giving any one accustomed to work in wood a very good idea of the use it may be put to. Collections of this kind would be of the greatest use. They might be accompanied with a book composed of leaves of the woods, prepared and polished, to show their texture and color, with labels giving the average size of which boards could be cut, the average price, and the market, etc. At present neither artist nor workman is aware of the resources which are at their disposal, and much meretricious ornament would be avoided if this mine of decorative riches were fully explored. In the French colonies department there were some articles of furniture which have been made from the woods of Cayenne, cut by the convicts sent to that settlement.

That a wide and systematic acquaintance with the resources of any country is the first requisite to the development of its trade may be considered an obvious truism; yet in this country, eminently trading and manufacturing, and depending for its greatness upon the growth of its trade and manufactures, no means are taken to make the traders and workers acquainted with the materials which are being wasted in our vast colonies, but which, if known, would be sources of wealth which we can scarcely over-estimate. The staghorn sumac may be mentioned as an example of a very finely veined wood, which seems to be plentiful, and which, though it does not grow to any great size, would be useful in manufacture. The butternut, a kind of walnut wood, grows to a large size, and seems to be very cheap. The kauru (or New Zealand pine), also a wood to veneer upon, would, I think, be of the greatest value; as well as the heron pine (which is sufficiently handsome to be used without any veneers), the red beech, and many others.

As a new application, or, rather, the extension of an old process in the treatment of wood, the chairs and settees in the Austrian department, made by bending long slips, may be instanced. Some of these chairs were exhibited in 1862. The manufacture has, however, greatly improved since that time. One chair in the exposition (purchased by the Prince of Wales) was all that

could be wished, both as regards strength and beauty. Though no one would wish to see this system of bending wood applied to all articles of furniture so exclusively as it is applied in the manufacture of these chairs, yet the capabilities of the process are well shown, and much might be learned from them. I noticed a method of producing a very good kind of decoration on polished wood by stamping with what is called by chasers a mutt tool, which produces a slightly roughened but regular surface, the pattern being left polished. I observed, also, in passing round the Historical Gallery, a mode of decoration which had an extremely good effect. This was an application of tortoiseshell. The under surface or side applied to the piece of furniture had been polished and gilded, the outside surface of the shell being then carefully smoothed, and polished, the gold showing through the semi-transparent shell, and giving all its markings, while the shell protected the gilding, so that, though it had been made for more than twenty years, it was still beautiful and effective. It seems to me much to be regretted that some method cannot be devised which would place all such methods of decoration so completely before all our workmen and designers, that they might have them, so to speak, at their finger-ends.

*London Building News.*

### Photography.

**Producing Colored Pictures.** — Various attempts have been made to obtain photographs of objects in their natural colors. These attempts have been so far successful as to produce photographs in which every color of the original was faithfully represented; even the iridescent colors of the peacock's feather have been beautifully photographed. It is, however, not yet quite certain whether any means have been discovered by which the colors can be permanently fixed, as hitherto they have slowly faded away, and become one uniform reddish tint. It is generally admitted that, up to the present time, the most successful photographer in producing colored pictures is M. Niepce de Saint Victor whose process is this: He takes a daguerreotype, or silver coated plate, and dips it into a weak solution of hypochlorite of sodium, having a specific gravity of 1.35, until it has assumed a bright pinkish hue. The plate is then covered with a solution of dextrine, saturated with chloride of lead; it is then dried, and subsequently submitted to the action of heat for several hours until the temperature of the plate reaches from 95° to 100°, or else expose the plate to the rays of the sun as a substitute for artificial heat, under a sheet of paper which had been steeped in an acid solution of sulphate of quinine. The plate is then ready to be placed in the camera obscura, and to receive the colored picture of the spectrum, or any other object. It is said he has succeeded in increasing the stability of the colors developed on the sensitive surface by covering the plate with an alcoholic solution of gum benzoin. This branch of photography has been called *Heliochromie*.

**Decorations of Porcelain, Glass etc.** — A very important economic application of photography to the decoration of porcelain, glass, etc., with gold, silver, and other metals, consists in producing an ordinary silver image on a collodion film, and then, by toning processes, converting this image into any other metal which may be necessary. For a gold design the image is toned with chloride of gold; for a design the color of steel the image is toned with chloride of platinum; for a black metallic design the image is toned with chloride of iridium; for a brown design the image is toned with chloride of palladium. A design in a metal of one color can be obtained by first toning the image by the proper metallic salt, and then saturating the film with a solution of some other salt. The collodion film, treated in the manner indicated, is then transferred to the porcelain, and the salt reduced to the metallic state by heat.

*Humphrey's Journal.*